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Utah Youth Suicide Study: Evidence-based Suicide Prevention for Juvenile Offenders
Running Head: Evidence-based Suicide Prevention for Juvenile Offenders

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ABSTRACT

One of the most devastating consequences of undiagnosed, untreated, or under-treated mental illness is suicide. Utah Youth Suicide Study findings demonstrated that 65% of youth suicide completers had contact with juvenile courts. Utah's Juvenile Court provided opportunities for suicide prevention, as nearly 70% of juvenile offenders suffer with mental illness. Youth in the intervention group of this pilot study, who received appropriate mental health screening, referral for treatment and rapid access to family-oriented psychiatric outpatient and in-home family services demonstrated significant mental health status improvement, as well as increased suppression, which decreased the length of time spent in out-of-home court placements. Findings highlight the importance of ensuring continuity of mental health care for juvenile offenders before out-of-home court placement, which require detainment. Ideally, mental health screening, referral, and treatment should be initiated when youth enter the juvenile court system in probation settings, a time when youth remain with their families.

INTRODUCTION

One of the most devastating consequences of undiagnosed, untreated, or under-treated mental illness is suicide. In the United States, suicide is a major public health problem as it is the eighth leading cause of death for males (Centers for Disease Control and Prevention, 2006). In fact, more teenagers and young adults die from suicide than from cancer, heart disease, AIDS, birth defects, stroke, pneumonia and influenza, and chronic lung disease combined (Satcher, 2001). Ninety percent (90%) of adolescents and young adults who die by suicide suffer from mental illness (Brent, 2003; Shaffer & Craft, 1999). According to the National Center for Injury Prevention and Control, Utah has ranked at or above the 90th National percentile for suicide death since 1989. For nearly two decades, Utah's adolescent suicide death rate exceeded the U.S. rate(Centers for Disease Control and Prevention, 2005). In 2002, Utah ranked 9th in the Nation for suicide deaths by youth aged 15-19 years with a rate of 13.43 per 100,000 persons—a rate nearly double the U.S. rate of 7.44 per 100,000.

In order to further understand the character of youth suicide in Utah, The Utah Youth Suicide Study (UYSS) examined one hundred fifty one consecutive youth suicides aged 13-21 years of age (N=151). Results showed that 89% (N=134) of the subjects were male; firearms were the most common method of death 58% (N=88); and, handguns were the most common type of firearm used 50% (N=44 of 88). Sixty-three percent of subjects had contact with Juvenile Justice (N=95 of 151). School aged subjects between 13-18 years of age were just as likely to be involved with Juvenile Justice (66%), as they were to be enrolled in school (63%)(Gray, Konkel et al. 2001).

Based on these findings, objectives of the UYSS were: 1) to extend the initial Utah Youth Suicide Study for 3 years to determine the reliability of the preliminary findings; 2) to examine the mental health status of a Juvenile Justice population; and, 3) to determine if mental health

status influences recidivism (Douglas Gray et al., 2001). The gender ratio in the Juvenile Court System was similar to the overall preliminary study findings, with males representing 91% of those with Juvenile Court contact. Of the 95 subjects involved with juvenile justice, 54% had a referral(s) for substance possession, use, or abuse. Thirty-two percent had at least one felony referral (Douglas Gray et al., 2001). Referral to the Juvenile Justice System was a risk factor for completed suicide for youth with eight or more offenses, with odds of 5.2. Therefore, the UYSS team hypothesized that the Juvenile Court System would provide new opportunities for mental health screening and suicide prevention (Douglas Gray et al., 2001).

In order to evaluate the mental health status of a Utah Juvenile Court population, researchers at Brigham Young University (BYU) joined the UYSS team. Researchers administered the Youth Outcomes Questionnaire (Y-OQ) among a large sample (N=719) of consecutive juvenile offenders. This BYU study included Utah residents who were consecutively referred statewide to the Juvenile Court System, for either status or criminal offenses, over a one-month period. The procedure required parental consent and child assent. The Y-OQ is a parent and self-report screening tool, which assesses level of distress and dysfunction in children and adolescents. As a psychometric measure, it can determine the subject's similarity to inpatient psychiatric populations, outpatient psychiatric populations, and a large untreated community sample (Burlingame et al., 1996). In this sample, 69% of subjects were male. Results indicated that 49% (N=352 of 719) were above the outpatient cut-off score, indicating an evaluation for outpatient services should be considered. Seventeen percent of the justice population (N=124 of 719) were above the inpatient cut-off score indicating that an evaluation for an inpatient psychiatric hospitalization should be considered. All Juvenile Court participants were compared to a community control group. The mean scores for study subjects vs. controls were as follows: Recidivism was positively correlated with Y-OQ symptom severity;

the more offenses, the higher the Y-OQ score. For example, 38% and 9% of subjects with a single offense met outpatient and inpatient cut-offs scores, compared to 66% and 27 % of subjects with 8 or more offenses (Gray, Konkel et al. 2001). Clearly, the Juvenile Court system offers a substantial window of opportunity to screen, identify, and refer high-risk individuals for treatment. Further, the Y-OQ may be an appropriate instrument to identify individuals in Juvenile Justice who are at risk for psychiatric problems, recidivism, and suicide (Douglas Gray et al., 2001).

Looking at youth suicide decedents in the context of families, researchers have found patterns of family history of psychopathology, difficult parent-child relationships, and youth not living with parents (Brent, 2003; Gould, Fisher, Parides, Flory, & Shaffer, 1996; Wasserman & McReynolds, 2006). Family functioning relates to juvenile delinquency (Farrington, 1989); a risk factor for suicide. National research suggests that family dysfunction, including parental discord is associated with juvenile delinquency (Fergusson, Horwood, & Lynskey, 1992). The juvenile delinquency that results from dysfunctional family functioning often begins a vicious cycle in which a youth's delinquent behavior leads to negative parental reactions, thus exacerbating the child's misbehavior and introduces a cycle that is both cause and effect (Patterson, 1982). Hirschi's Social Control Theory posits that a lack of attachment to societal norms, especially those developed through the parent-child relationship, breaks the bond with society and leaves individuals free to be criminal (Hirschi, 1969). Effective family functioning, which includes clear expectations for behavior and monitoring and enforcement of those standards, presumably provides protective factors in developing a child's notions of social responsibility (Baumrind, 1971; Morley, Rossman, Kopczynski, Buck, & Gouvis, 2000). According to the National Institute of Medicine, discord within the family is correlated with

increased suicide, while parental and family connectedness has a protective effect, especially among youth (Institute of Medicine, 2002).

Woolfenden et al. (2002) examined seven randomized control trials of interventions focusing on family and parenting interventions for juvenile offenders between 10-17 years of age. Findings suggest that these types of interventions may result in cost savings for society, a reduction in the amount of time spent in juvenile justice facilities, and a decrease in rates of recidivism for juvenile offenders (Woolfenden, Williams, & Peat, 2002). According to Cocozza, at least one in five juveniles arrested in the United States under age 18 has serious mental health problems. In 1999, police arrested 2.5 million juvenile offenders. Investigations of juvenile offender facilities show that mental health services for youth are unavailable (Cocozza, 1992). In Utah, even fewer mental health resources are available for juvenile offenders involved with probation officers outside juvenile facilities (Thomas, Holzer, & Wall, 2000). This is important for pediatric populations in Utah because untreated mental illness is a known risk factor for adolescent suicide, especially among Utah's juvenile offenders assigned to probation (Moskos, Achilles, Keller, Workman, & Gray, 2002). Some researchers recommend that mandated assessment in juvenile court settings may reveal treatable mental health problems in juvenile offenders, which may improve overall functioning, thereby reducing recidivism (O'Shaughnessy, 1992).

Despite the growing concern, there is a paucity of adequate research on the prevalence and types of mental health disorders among youth in the juvenile justice system. A comprehensive review of the literature found the research to be not only scarce, but also methodologically flawed (Otto, Greenstein, Johnson, & Friedman, 1992). Other reviews reached similar conclusions (Wierson, Forehand, & Frame, 1992). Despite these problems, some general conclusions can be drawn. First, youth in the juvenile justice system experience substantially

higher rates of mental health disorders than youth in the general population; a conclusion drawn from a review of 34 studies (Otto, Greenstein, Johnson, & Friedman, 1992). Second, a high percentage of youth in the juvenile justice system have a diagnosable mental health disorder. Indeed, many youth qualify for more than one diagnosis (Virginia Policy Design Team, 1994). Third, based on those studies, one in five youth in the Juvenile Justice System has serious mental health problems. The youth with serious mental health problems in the general population is estimated at 9-13% (Freidman, Katz-Leavy, Manderscheid, & Sandheimer, 1996); however, the youth with serious mental health problems in the Juvenile Justice System is consistently found to be at least twice as high as the general population at 18-26% (Otto, Greenstein, Johnson, & Friedman, 1992; Schultz & Mitchell-Timmons, 1995) and, for incarcerated youth, the estimate is between 50-75 % (Coalition for Juvenile Justice, 2000). Finally, many of the youth in the Juvenile Justice System with mental illness also have a substance abuse disorder.

Utah's Third District Juvenile Court serves 42% of the juvenile offender population statewide, approximately 16,700 juveniles per year. Utah judges consider ongoing court supervision of young offenders after the commission of the third minor offense or the first felony offense. Probation supervision is the most common form of ongoing court supervision. Because more offenses correlated with higher Y-OQ scores, the pilot study used the Y-OQ to identify adolescents through the juvenile court system at risk for mental illness, recidivism, and suicide (D Gray, Achilles, & Keller, 2002; Douglas Gray et al., 2001). This study provided a comprehensive and consistent family-oriented treatment intervention and examined two constructs. First, does the delivery of an Individual Treatment Plan improve mental health status as measured by the Y-OQ, decrease the rate of recidivism, and increase the rate of suppression among those at highest risk for suicide in Utah (male adolescents aged 13-16 years in Third District Juvenile Court)? Second, is the systematic identification and earlier intervention at the

secondary prevention level, which included more intensive, easily accessible, and coordinated mental health services effective in reducing court placement (days spent in detention centers, corrections, observation and assessment)?

METHODS

Sample

With IRB approval from the Utah Department of Health and the University of Utah Health Sciences Center, the sample for this study included 44 male participants from Utah's Third District Juvenile Court. This pilot study intervention focused on the predominant offender population in need of suicide prevention services; youth suffering with mental illness. This group is much more likely than the general population of age mates to use drugs, alcohol, or suffer from family disruption such as domestic violence, incarceration, or mental illness. According to field probation officers, 70-80% of probation placed juvenile offenders suffer from mental health or substance abuse problems. Inclusion criteria included youth between the ages of 13-16 years old, with 2-12 juvenile court referrals, English as their primary language, no sexual-related offenses, no prior use of in-home family services (Utah Youth Village: Families First Program), and no apparent sign of a severe intellectual disability or formal diagnosis of Autism. Participants were assigned to one of two groups: intervention (n=22) and comparison (n=22), after matching youth according to their mental health status (using Y-OQ and Y-OQ PA), number and type of offenses, and age.

Procedures

This study provided a comprehensive and consistent family-oriented treatment intervention. Recruitment included a screening process. Selection of participants required cooperation from nine local probation offices from Utah's Third District Juvenile Court. These offices included one assessment and diversion office, two intake offices, and seven probation

offices in Salt Lake City. When a male youth was referred to the juvenile court system for their 2nd-12th offense, the probation officer requested that his parents completed the screening process for this study. The officer provided a brief description of the study and administered the informed consent for the screening process. Notably, the parent's decision to participate, or not to participate in the study, did not have an effect on how the juvenile court system handled their child's case.

Once parents decided to allow their child to participate in the study, parents completed a Youth Outcomes Questionnaires (Y-OQ and Y-OQ PA) that quantified mental health status, both the degree and chronicity of symptoms of psychological dysfunction and distress for their son. As a result, the research staff and the parents had the same information about the child. Selection criteria included a minimum participant Y-OQ score of 60 and a Y-OQ PA score of <5. The study coordinator contacted the parents of those participants who met enrollment criteria and informed the parent that their son qualified for mental health services offered through the study. The developer of the Y-OQ postulated that youth who score 60+ on the Y-OQ were most likely to have mental health problems that would respond to the comprehensive, tailored, accessible, intensive family-oriented in-home and psychiatric treatment services compared to families who did not receive treatment. The principal investigator assigned participants two groups: intervention and comparison, after matching youth according to their mental health status (scores from the Y-OQ and Y-OQ PA), number and type of offenses, and age. At the time of enrollment, the study coordinator obtained informed parent consent and child assent. Enrollment of participants occurred between March 2001 and July 2004. The study coordinator prioritized participants with high Y-OQ scores (>100), suggesting the need for a timely inpatient mental health evaluation due to significant distress or dysfunction associated with mental illness.

The study protocol exceeded existing community resources, as it provided comprehensive, tailored, accessible, intensive family-oriented in-home and psychiatric treatment services. The treatment activities were "family-centered." Professionals, including probation officers, psychiatrists, and in-home family specialists, presented treatment recommendations and discussed treatment options with the parents throughout the study. The parents worked equally with the professionals to develop the "Individual Treatment Plan." The parents approved all treatments for their son's Individual Treatment Plan. Therefore, when their son was assigned into the intervention group, the immediate family was supportive of the Individual Treatment Plan. However, both the parents of the intervention and comparison groups had access to existing community resources for any mental health problems identified through the Y-OQ.

Intervention Group A: Participants assigned to Group A received all family-centered treatment including in- home services, psychiatric assessment and treatment, case management, and a core-team meeting. In-home services consisted of a trained specialist from Utah Youth Village: Families First Program. During the six weeks, the Families First Specialist focused on teaching the parents specific skills. Efforts were made to work with the teenager, and to spend time mentoring them. However, only the parents could discontinue the in-home services or psychiatric treatment. During the core-team meeting, professionals worked equally with the parents and the participant to develop a "family-centered" treatment plan for the rest of the year, which included a process of prioritizing treatment goals for the participant and his family as appropriate. Core-team meetings included the Families First specialist, the senior psychiatric resident (child psychiatry or triple-board program), the study coordinator, the youth's juvenile court officer, the parent or guardian, and the youth participant.

The Families First Specialist continued to be available to the family by pager twenty-four hours per day, seven days per week by pager, after the six week in-home service program for one

year. Total service hours during the in-home service program ranged from 80-100 hours. Psychiatric treatment services included a full bio-psychosocial assessment, which included a participant and family assessment, a treatment plan (with or without psychotropic medications), referral for individual or family psychotherapy, follow-up sessions; and, transition to another provider at the end of the study, if needed. A board certified child psychiatrist, an Associate Professor in the University of Utah School of Medicine (Department of Child and Adolescent Psychiatry) supervised senior psychiatric resident cases. Case management included coordination of psychiatric services by the study coordinator, core-team meetings, as well as completion of assessment tools at 5 time intervals.

Comparison Group B: Participants assigned to Group B did not receive the family-centered treatment. Each participant was able to seek existing services available in their community, but was not given specific referral information unless the issue of safety came into question.

Compensation: Participants assigned to Group A and Group B were given $10 compensation for each set of completed forms and at twelve months, a $60 bonus was given to participants who completed the full year study. Total possible compensation was $100 per family.

Instruments: The Youth Outcome Questionnaire (Y-OQ) tracked psychosocial outcomes of youth participants. The Y-OQ system was developed to measure ongoing treatment progress of children and adolescents receiving psychotherapy for behavioral and emotional problems. Originally conceived as the child and adolescent equivalent of the Outcome Questionnaire – 45 (OQ-45; (Lambert, Hansen, Umphress, Okiishi, & Burlingame, 1996)), the Y-OQ is a 64-item parent- or guardian-report measure of psychosocial functioning for children and adolescents, aged 3-18 years. Unlike other commonly used measures of youth functioning [e.g., the Child Behavior Checklist; (Achenbach, 1991)] the Y-OQ was specifically designed to be sensitive to observed changes in psychosocial functioning rather than diagnose or categorize specific forms

of psychopathology. Parents or others with reasonably extensive interaction with the child or adolescent (e.g., counselors in residential treatment settings) typically complete the questionnaire at intake to establish a baseline for symptom severity and then complete it at regular intervals to track the youth's progress in treatment.

The Y-OQ instrument yields a total score and six separate subscale scores with each of the subscales tapping various behavioral domains including: a) Intrapersonal Distress, b) Somatic symptoms, c) Interpersonal Distress, d) Critical items, e) Social Problems, and f) Behavioral Dysfunction. Use of subsets of items from the Y-OQ allows for reliable tracking of many of the outcomes required in the RFA, including overall psychosocial functioning, stability in family and living conditions, social support/social connectedness, suicidal ideation, and clients' reports of outcomes. Items for each domain are rated on a five-point Likert Scale with ratings based on how true each item is for the child/adolescent over the previous seven days.

The psychometric properties of the Y-OQ are strong, with high internal consistency of the total score ($r = 0.97$) across four samples of elementary school students ($N = 423$), a community normative sample ($N = 681$), outpatient ($N = 342$), inpatient ($N = 174$), and a clinical normative sample ($N = 490$)(Burlingame et al., 2001). Test-retest reliability has been reported at $r = 0.83$ (Burlingame et al., 1996). Criterion-related validity is supported by the strong association ($r = 0.84$) between the total score of the Child Behavior Checklist (Achenbach, 1991) and the total score of the Y-OQ (Burlingame et al., 2001). The Y-OQ has been shown to be sensitive to change in a variety of treatment settings including outpatient (Berrett, 1999), inpatient (Burlingame et al., 2001), day treatment (Robinson, 2000), in-home (Mosier et al., 2001), adjudicated delinquency (Hoag et al., 1998), and wilderness programs (Russell, 2002).

Using formulas developed by Jacobson and Truax (Jacobsen & Truax, 1991), the Y-OQ facilitates the process of assessing patient change through its established Reliable Change Index

(RCI) and cut scores identifying levels of dysfunction observed in normal and clinical populations. Youth whose Y-OQ scores change in a positive or negative direction by at least 13 points are regarded as having demonstrated reliable change. Furthermore, by using established ranges of Y-OQ scores for community-normal (≤45), outpatient (46-91), and inpatient (≥92) clinical populations, the measure can be used as a screening tool for determining the intensity of services likely to be required by an individual. To this end, this study used the Y-OQ as an outcome measure to determine the appropriateness of the level of supports and services assigned to juvenile offenders, resulting in more efficient resource allocation of participating agencies.

Finally, among the advantages of the Y-OQ system is its ability to identify at an early stage in treatment those individuals who may be at risk for treatment failure. Consistent with findings from adult studies using the OQ-45 (Lambert et al., 2002), early warning algorithms have been developed for the Y-OQ that have successfully identified child/adolescent patients who were reliably worse or had deteriorated by the time that therapy was discontinued (Bishop et al., 2005). The use of this early warning system allowed agencies to learn early on if the supports and services they provided are met the needs of the youth they served, which allowed for future improvements in resource allocation and service utilization.

The Family Information Sheet Part I was used to assess demographic information of participants and their families, and was collected only at enrollment. The Family Information Sheet Part II assessed the history service use by the participant, as well as information on youth and families' prior help-seeking behavior and barriers to mental health or substance abuse treatment services and was collected at each three-month interval.

Additionally, the study included data from juvenile court records regarding incident type and severity of offense. A spreadsheet tracked all participants' involvement with the Juvenile Court System. Information included days spent in court placement (detention, observation and

assessment, or corrections). This information provided data necessary to use the incident type and severity of offense to calculate recidivism and suppression.

Data Analyses

The design for this study includes repeated measures of both the intervention group (n=22) and the comparison group (n=22). For all measures, data were compared across five time intervals including enrollment, 3-month, 6 month, 9 month, and 12 month. All demographic data were analyzed using SPSS 14.0 including frequencies of family history of mental illness, as well as suicide ideation, attempt, completion and reported sexual or physical abuse. Additional outcome data regarding mental health status, recidivism and suppression, and days in court placement were analyzed using STATA 9.0. A mixed model approach was used to analyze Y-OQ scores, allowing for clustering to observations within individuals using STATA XT Regression Modeling. Rates of recidivism and suppression were calculated in accord with existing court procedures and analyzed using McNemar's Tests for paired comparisons. Days in court placement were analyzed using the Wilcoxon Signed-Rank test due to the skewness of the data.

RESULTS

The sample for this study (N=44) included only male participants who incurred 2-12 offenses through Utah's Third District Juvenile Court. Participants in the intervention group (n=22) included primarily White males with 4 aged 13 years, 3 aged 14 years, 10 aged 15 years, and 3 aged 16 years, as well as one Hispanic participant aged 13, and one Black participants aged 14 years. Participants in the comparison group (n=22) included primarily White males with 3 aged 13 years, 5 aged 14 years, 5 aged 15 years, and 5 aged 16 years, as well as 4 Hispanic participants with 2 aged 15 and 2 aged 16. According to parent report, participants in both the intervention and comparison groups demonstrated a very similar family history of depression (77

versus 73%), attention deficit hyperactivity disorder, (18% for both groups), prior use of medication for emotional problems (73 versus 68%), suicide ideation, (5% for both groups), suicide attempt (9 versus 14 %), and suicide completion (9% for both groups). Parents reported a history of physical or sexual abuse for one participant in each group (5%).

With regard to mental health status as measured by the Y-OQ, results showed an overall increase in mental health status for participants in the intervention group as compared to participants in the comparison group ($p<.001$). An interaction effect was found between participants who received treatment and the number of days in treatment, indicating an improvement in mental health as days in treatment advanced with a relative daily change in Y-OQ score of -0.073 for those in the intervention group compared to those in the comparison group ($p = 0.007$) (Table 1).

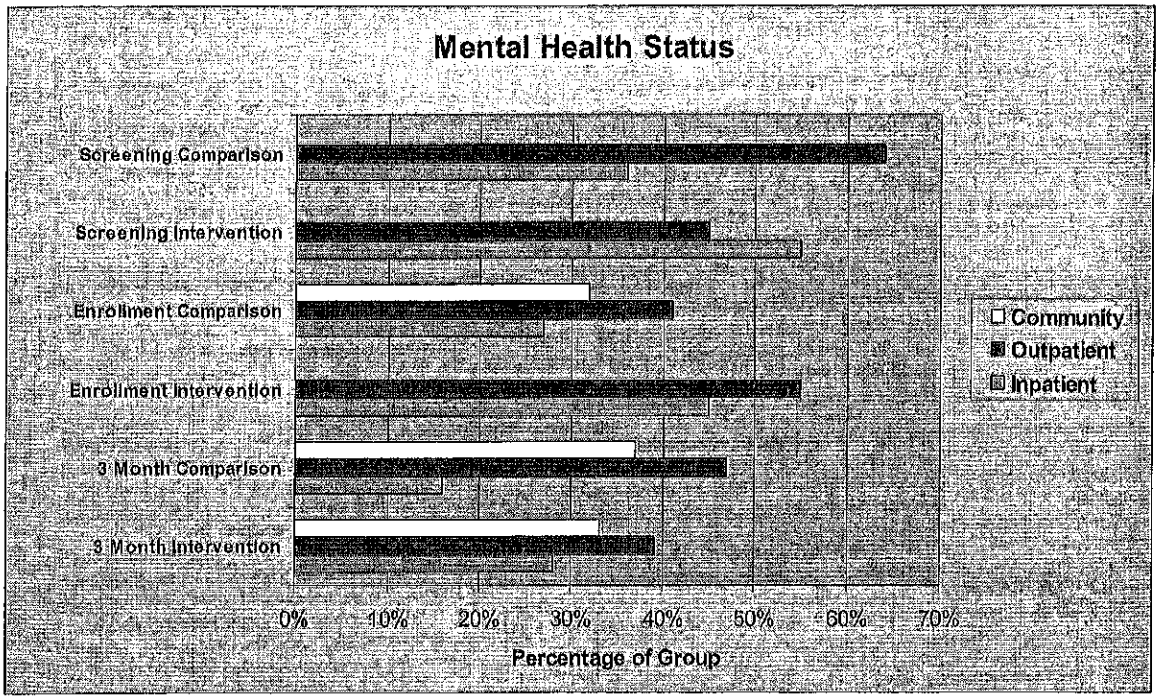
Table 1: Y-OQ, Hierarchical regression, clustering within intervention-comparison matched pairs and across repeated measures

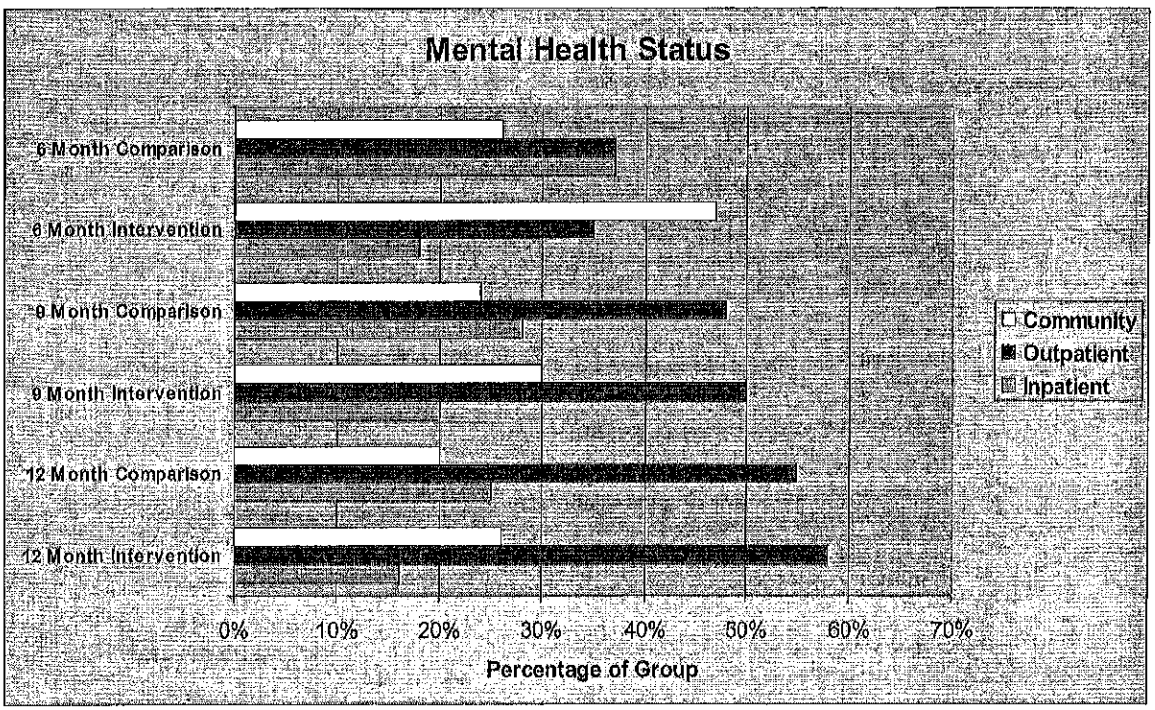
	B	95% CI	*p*
Treatment	-28.497	-65.411, 8.417	0.130
Days	0.006	-0.031, 0.043	0.747
Interaction	-0.073	-0.126, -0.020	0.007

Wald χ^2 (df=45) = 191.58, $p < 0.0001$
Overall $R^2 = 0.56$

The variable for days of treatment demonstrates the difference of values by day regardless of the treatment condition. Because the results for both treatment and days are statistically insignificant, and the result for the interaction is statistically significant, findings suggest that the intervention improved mental health status for youth in the intervention group in comparison to youth in the comparison group. The important result is the value for the interaction – this value is representative of the change across time for those in the intervention group relative to those in the comparison group.

Figure 1: Mental Health Status for Intervention and Comparison Groups at each Time-Interval (Inpatient Treatment Range-Outpatient Treatment Range-Community Normal Range)





Rates of recidivism and suppression were analyzed using McNemar's test for paired comparisons. Recidivism was defined as one or more offenses incurred by a participant after enrollment for one year. These results indicate that the participants in the intervention group progressively decreased throughout the first six months, as 78% did not recidivate, while only 57% of the comparison group did not recidivate; however these results failed to achieve statistical significance (p=.21). Data for one-year post enrollment reflects similar findings with 77% for intervention and 57% for comparisons (p=.22). Additionally, youth in the intervention group all recidivated at the same level; however, youth in the comparison group recidivated at higher levels, including more violent offenses such as aggravated assaults; assaults; and, threats to life or property by 5 participants; drug related offenses by 5 remaining participants; and, disorderly conduct and unlicensed driving by 2 participants (Table 2).

Table 2: McNemar's Test for Paired Comparisons-Recidivism

Six Months Post Enrollment

	RECIDIVISM		
	COMPARISON		
INTERVENTION	Yes	No	Total
Yes	1	1	2
No	5	15	20
Total	6	16	22

McNemar, p (exact) = 0.21

One Year Post Enrollment

	RECIDIVISM		
	COMPARISON		
INTERVENTION	Yes	No	Total
Yes	2	3	5
No	8	9	17
Total	10	12	22

McNemar, p (exact) = 0.22

Suppression was defined as no offenses incurred by a participant after enrollment for one year. Further analyses were conducted to determine significance of suppression for participants in the intervention compared to the comparison group. At six months post enrollment, participants in the intervention group were more likely to not offend when compared to comparisons (p=.05) (Table 3). At one-year post enrollment at difference remained; however, failed to demonstrate statistical significance (p=.*14*) (Table 3).

Table 3: McNemar's Test for Paired Comparisons-Suppression

Six Months Post Enrollment

	SUPPRESSION COMPARISON		
INTERVENTION	Yes	No	Total
Yes	6	11	17
No	3	2	5
Total	9	13	22

*McNemar, p (exact) = 0.05

One Year Post Enrollment

	SUPPRESSION COMPARISON		
INTERVENTION	Yes	No	Total
Yes	2	9	11
No	3	8	11
Total	5	17	22

McNemar, p (exact) = 0.14

Regarding Juvenile Court placement during the first six months of the study, 11 participants in the intervention group spent a total of 190 days in detention centers, which cost approximately $19,000 and at twelve months 233 days, which cost approximately $23,300. In comparison, during the first six month of the pilot study, 11 of the participants in the comparison group spent a total of 634 days, which cost approximately $63,400 and at twelve months, 777 days, costing approximately $77,700-- over 3 times the cost of the intervention group. During the first six months, one participant in the intervention group spent 58 days in corrections, which cost approximately $14,500, and no additional days during the last six months of the study. Whereas, 6 participants in the comparison spent a total of 286 days in corrections during the first six months of the study, which cost approximately $101,750, and at twelve months 490 days**, which cost approximately $162,950. Concomitantly, 3 participants in the comparison group spent 87 days* in observation and assessment, which cost an additional $17,400. Court placement for the comparison group totaled $258,050, whereas court placement for the intervention group in addition to the cost of the family-centered suicide prevention services including psychiatric evaluation and in-home services totaled $158,800. Days in placement were analyzed using the Wilcoxon signed-rank test to determine significance. Results indicate that participants in the comparison group were more likely to spend time in corrections (p=.01) and observation and assessment (p=.04), see Table 4.

Table 4: Wilcoxon Signed-Rank Test for Days of Court Placement

TYPE OF COST	6 MONTHS		12 MONTHS		TOTAL COST	
	Intervention	**Comparison**	**Intervention**	**Comparison**	**Intervention**	**Comparison**
Treatment Services	$121,000 One year PRN	$0	$0	$0	$121,000	$0
Detention Centers	$19,000 190 days	$63,400 634 days	$4,300 43 days	$14,300 143 days	$23,300 233 DAYS	$77,700 777 DAYS
Corrections	$14,500 58 days	$101,750 286 days	$0 0 days	$61,200 204 days	$14,500 58 DAYS	**$162,950** **490 DAYS****
Observation & Assessment	$0 0 days	$17,400 87 days	$0 0 days	$0 0 days	$0 0 DAYS	**$17,400** **87 DAYS***
TOTAL COST & PLACEMENT	248 DAYS	1007 DAYS	43 DAYS	347 DAYS	$158,800 291 DAYS	$258,050 1354 DAYS

** Wilcoxon signed-rank test significance p=.01
* Wilcoxon signed-rank test significance p=.04

Furthermore, participants in the comparison group reported more emergency room visits, primary care physician visit, and days spent in residential treatment facilities. Parental workdays missed due to actions of the participant totaled 124 days for the comparison group, compared to 82 days the intervention group (i.e., court dates, house arrest, and appointments related to court disposition).

DISCUSSION

In this study, findings suggest that the delivery of an Individual Treatment Plan improved mental health status, decreased recidivism, and increased suppression among those at highest risk for suicide in Utah, male adolescents aged 13-16 years who incurred 2-12 juvenile offenses through Third District Juvenile Court. Third District Juvenile Court represents approximately 40% of Utah's juvenile offending population. The systematic identification and earlier intervention with high risk adolescents (at the secondary prevention level), which included more intensive, easily accessible, and coordinated mental health services proved effective in reducing length and degree of court placement (detainment in detention centers, observation and assessment, and corrections). Findings highlight the importance of ensuring continuity of mental

health care for juvenile offenders before out-of-home court placement, which require detainment. Ideally, mental health screening, referral, and treatment should be initiated when youth enter the juvenile court system in probation settings, a time when youth remain with their families.

Nationally, few mentally ill youth receive help in juvenile court probation settings, a time when youth remain with their families. In fact, a majority of juvenile detainees, youth detained in detention or correctional settings, who suffer from mental disorders do not receive appropriate treatment, according to a study of almost 2000 detainees aged 10-18 (Teplin, Abram, McClelland, Washburn, & Pikus, 2005). Researchers found that a mere 15.4 % of those with mental disorders received treatment at the detention or correctional facility where they were being held, with an additional 8.1% receiving treatment in the community, and the study's authors said they defined mental disorder conservatively in their study. These researchers considered the youth to need treatment if he or she met the criteria for a major depressive episode, manic episode, or psychosis within the previous six months and demonstrated impaired functioning. In general, more than one in six juveniles in detainment meets criteria for a major mental disorder. According to these researchers, "The challenge to public health is to provide accessible, innovative, and effective treatments to juvenile detainees, a population that is often beyond the reach of traditional services,"(Teplin, Abram, McClelland, Washburn, & Pikus, 2005, p. 1773).

Findings from this study in Utah's Third District Juvenile Court suggest that mental health service should be initiated before detainment, rather than delaying the provision of mental health service after detainment. Juvenile offenders who received family-centered mental health treatment, early in youth's contact with the Juvenile Court, were more likely to exhibit decreased recidivism, increased suppression, and reduced degree and length of court placement. Currently, intensive family-centered in-home services are only provided to youth with greater than 20

offenses after out-of-home placements with Utah's Juvenile Justice Services (detention, observation and assessment or corrections) in comparison to youth in this study who received the same services with only 2-12 offenses after in-home placements with Utah's Juvenile Court (assessment and diversion, intake, and probation). According to the 2005 Annual Report of Utah's Juvenile Justice Services, the Office of Early Intervention Services administers a variety of services and programs for youths who are considered "less delinquent." Currently, these services include drop-in crisis intervention services, day programs, and short-term residential programs. The purpose of these services is to prevent youths from progressing further into the Juvenile Justice Services system (out-of-home placements) and to return them to home as soon as possible and keep them at home after out-of-home placements. However, these services failed to address both mental health and criminal problems of youth in the comparison group. Given youth were matched for mental health status, number and type of offense and age, before assignment to the intervention or comparison group, findings from this study suggest, that youth who received appropriate mental health services when entering Utah's Juvenile Court (in-home placements) were prevented from progressing further into Utah's Juvenile Justice Services (out-of-home placements) after enrollment evidenced by significant increases in suppression and decreases in degree and length of out-of-home court placements. Further, these kids did not spend any time in out-of-home placements after receiving appropriate mental health screening, referral, and treatment.

The current Continuum of Care implemented by Utah's Juvenile Justice Services does not seem to include appropriate mental health screening, referral, and delivery of treatment services. Recent adaptations focused on sentencing authority, sentencing guidelines, and disposition of serious youth offenders, youth removed from costly juvenile programs that provide little impact who become transferred to the adult court system. In fact, the continuum of care fails to

distinguish between youth with criminal problems and youth with mental health problems. According to this study, youth with mental health problems who receive treatment upon entering Utah's Juvenile Court with in-home placements are less likely to develop criminal problems, which result in out-of-home placements with Utah's Juvenile Justices Services, as youth in the intervention group who recidivated, recidivated at the same level including shoplifting, curfew, littering; whereas, more youth in the comparison group recidivated, but recidivated at higher levels, including more violent offenses such as aggravated assaults, assaults in correctional settings, and, threats to life or property, as well as more drug related and disorderly conduct offenses. The current continuum of care allocates the majority of resources to address criminal problems. This study suggests that resource allocation to address mental health problems would decrease criminal problems, as well as the degree and length of out-of-home court placements.

This study provided resources necessary to initiate and ensure continuity of care earlier for juvenile offenders than the existing service delivery system. For youth offenders with high levels of mental health distress and dysfunction, this intervention demonstrated statistical significance to be considered as "best practice." It is recommend that any mental health intervention implemented with juvenile offenders be evidence-based (Sukhodolksy & Ruchkin, 2006). The findings of this study show this evidence-based intervention is effective in increasing suppression and decreasing out-of-home court placements. Intensive in-home family services efforts initiated when youth entered the system addressed the unique psychological, biological, and social factors for families as a whole rather than just for the youth offender. Typically, out-of-home court placement requires treatment for the youth offender without family involvement. The Y-OQ allows clinicians and non-clinicians to understand distress and dysfunction of mental illness and track mental health outcomes of youth in comparison to impatient, outpatient and community normal ranges. Researchers recommend ongoing evaluation using mental health

outcome measures to ensure program modifications occur as the needs of the juvenile offender population change. As with this study, future research in this area should follow the recommendation to screen all youth offenders upon entrance rather than at the point of detainment for mental health problems in order to facilitate appropriate mental health treatment for all identified vulnerable youth (Wasserman & McReynolds, 2006).

Both locally and nationally, continuity of care for juvenile offenders is an important concern, not because of a lack of utility, but because funds are allocated for the implementation of such a care system within separate silos, such as Utah's in-home court placements administered through Juvenile Court and out-of-home court placements administered through Juvenile Justice Services. Bridging the gap of care for any consumer in the United States takes time and effort. Recommendations have been made federally and by researchers to engage in policy alterations to ensure better continuity of mental health care; especially for such a vulnerable population as juvenile offenders (Wasserman et al., 2003). According to Thomas and Penn (2002) the population of juvenile offenders has evolved into a much more volatile group of youth with more pronounced mental health needs (Thomas & Penn, 2002). Collaboration and coordination across a broad spectrum of agencies, institutions, and health care associations, is critical to ensure continuity of care and comprehensive evidence-based prevention efforts. This pilot study included a small convenient sample of primarily urban youth due to funding constraints. These constraints limited both generalizability of findings and power of statistical analyses. Public/private partnerships that evolve from collaboration may improve the existing service delivery system to a greater extent than each do individually. Through funding awarded by The US Department of Health and Human Services, Division of Substance Abuse and Mental Health Services Administration (SAMHSA) under the Garrett Lee Smith Memorial Act, $1.2 million dollars will be spent over the next 3 years to expand the model used in this pilot study to

include all offenders involved with Utah's Juvenile Court system. These grant monies will close a gap in Utah's existing service delivery system for juvenile offenders with in-home court placements by providing appropriate mental health screening, referral, and treatment for youth at highest risk for suicide in Utah, youth offenders who struggle with undiagnosed, untreated, or under-treated mental illness.

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Table 1: Y-OQ, Hierarchical regression, clustering within intervention-comparison matched pairs and across repeated measures

	B	95% CI	*p*
Treatment	-28.497	-65.411, 8.417	0.130
Days	0.006	-0.031, 0.043	0.747
Interaction	-0.073	-0.126, -0.020	0.007

Wald χ^2 (df=45) = 191.58, $p < 0.0001$
Overall $R^2 = 0.56$

Table 2: McNemar's Test for Paired Comparisons-Recidivism

Six Months Post Enrollment

	RECIDIVISM		
	COMPARISON		
INTERVENTION	Yes	No	Total
Yes	1	1	2
No	5	15	20
Total	6	16	22

McNemar, *p* (exact) = 0.21

One Year Post Enrollment

	RECIDIVISM		
	COMPARISON		
INTERVENTION	Yes	No	Total
Yes	2	3	5
No	8	9	17
Total	10	12	22

McNemar, *p* (exact) = 0.22

Table 3: McNemar's Test for Paired Comparisons-Suppression

Six Months Post Enrollment

	SUPPRESSION		
	COMPARISON		
INTERVENTION	Yes	No	Total
Yes	6	11	17
No	3	2	5
Total	9	13	22

*McNemar, *p* (exact) = 0.05

One Year Post Enrollment

	SUPPRESSION		
	COMPARISON		
INTERVENTION	Yes	No	Total
Yes	2	9	11
No	3	8	11
Total	5	17	22

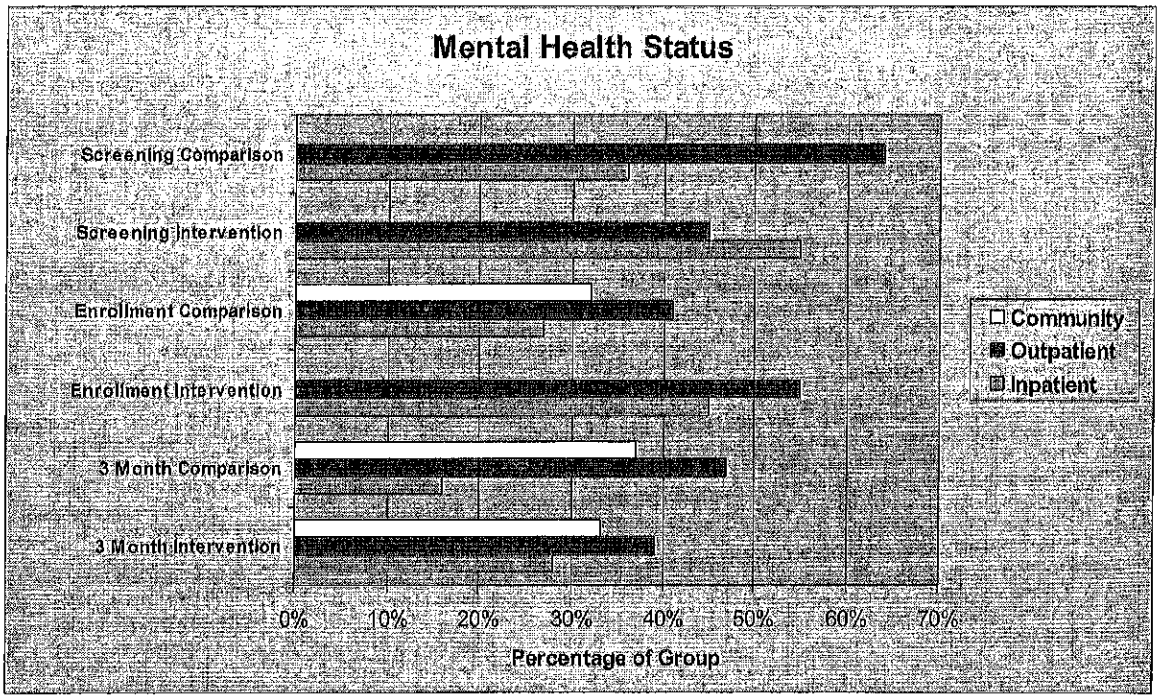
McNemar, *p* (exact) = 0.14

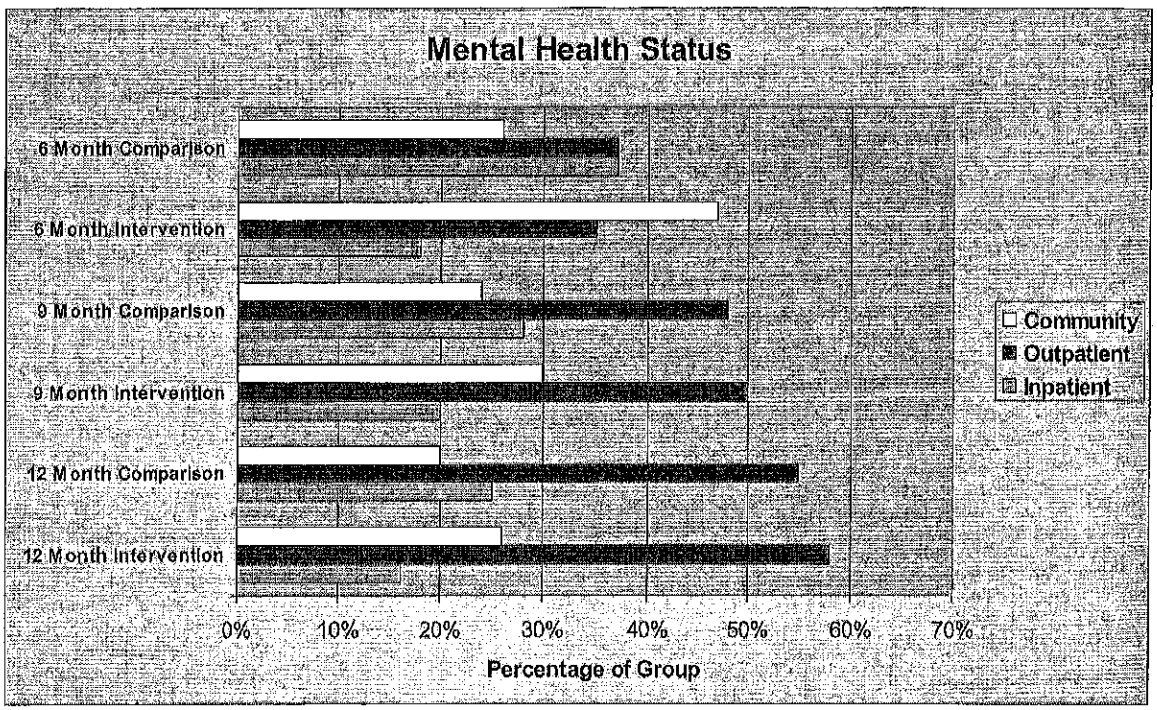
Table 4: Wilcoxon Signed-Rank Test for Days of Court Placement

TYPE OF COST	6 MONTHS		12 MONTHS		TOTAL COST	
	Intervention	**Comparison**	**Intervention**	**Comparison**	**Intervention**	**Comparison**
Treatment Services	$121,000 One year PRN	$0	$0	$0	$121,000	$0
Detention Centers	$19,000 190 days	$63,400 634 days	$4,300 43 days	$14,300 143 days	$23,300 233 DAYS	$77,700 777 DAYS
Corrections	$14,500 58 days	$101,750 286 days	$0 0 days	$61,200 204 days	$14,500 58 DAYS	**$162,950** **490 DAYS****
Observation & Assessment	$0 0 days	$17,400 87 days	$0 0 days	$0 0 days	$0 0 DAYS	**$17,400** **87 DAYS***
TOTAL COST & PLACEMENT	248 DAYS	1007 DAYS	43 DAYS	347 DAYS	$158,800 291 DAYS	$258,050 1354 DAYS

** Wilcoxon signed-rank test significance p=.01
* Wilcoxon signed-rank test significance p=.04

Figure 1: Mental Health Status for Intervention and Comparison Groups at each Time-Interval (Inpatient Treatment Range-Outpatient Treatment Range-Community Normal Range)





How current model addresses needs of juvenile offenders: Between March 2007 and March 2009, the Juvenile Court implemented a new policy to screen all youth in Third District, in Salt Lake County, for mental health and suicide risk using the Y-OQ. Of 20,817 youth referred to 3rd District during this time, 1,798 completed a Y-OQ (445 females and 1324 males; with 40% n=710 reporting Hispanic ethnicity). Of youth who qualified for services, 189 sought services. The following table shows the number of offenses for youth prior to qualifying with mental health (outpatient or inpatient Y-OQ) and/or suicide risk. Youth scoring between 46 and 91 meet outpatient range criteria and should be evaluated for outpatient treatment. Youth scoring 92 or higher meet inpatient range criteria and should be evaluated for inpatient treatment.

	Outpatient Y-OQ no Suicide Risk		Outpatient Y-OQ & Suicide Risk		Inpatient Y-OQ no Suicide Risk		Inpatient Y-OQ & Suicide Risk	
	Male	Female	Male	Female	Female	Male	Female	Male
1-6 offenses	39	32	8	17	10	13	16	19
7-12 offenses	13	3	4	1	3	0	4	1
13+ offenses	3	0	0	0	1	0	2	0

Of the 189 who qualified and sought services: 86% (n=163) sought services with one screening, 5% (n=10) sought services after two screenings, 2% (n=4) sought services after three screenings, 4% (n=8) sought services after four screenings; and 2% (n=4) sought services five 5 screenings.

The following table shows the number of youth who demonstrated either a clinical improvement in mental health or suicide risk, as well as youth who demonstrated both a clinical improvement in mental health and suicide risk simultaneously over time based on the type of services sought by youth. The table shows clinical improvement in mental health and suicide risk reduction or both mental health improvement, in the context of the youth's court offenses. Recidivism applies if youth reoffend at a higher level than prior to accessing services. Suppression applies if youth reoffend at the same or lower level. Suppression includes the youth who do not reoffend at all. At 0-3 months post-treatment, 77% (n=145) of youth had no new offense. At 3-6 months post-treatment, 80% (n=152) of youth had no new offense. Of the total 189 cases, 16 cases did not have enough data points to show treatment progress. Of the 16, seven cases did not return to the clinic even after multiple attempts by doctors and staff to contact them; five cases did not return but were reportedly seeing a psychiatrist/psychologist elsewhere; two cases had moved; in one case the physician felt further treatment was not necessary at this time; and the final case has a follow-up appointment scheduled this month.

Type of Mental Health Service		0-3 Months Post-Exmt		3-6 Months Post-Exmt	
		Recidivism	Suppression	Recidivism	Suppression
Outpatient Psychiatric Services Only		9% (n=8)	91% (n=79)	8% (n=7)	92% (n=80)
	Clinical Improvement Only	0	14	1	13
	Suicide Improvement Only	0	10	0	10
	Both Clinical & Suicide Improvement (Same session)	3	21	3	21
	Clinical & Suicide Improvement (Separate Sessions)	1	6	0	7
	Suicide & Both Improvements (Separate Sessions)	2	3	0	5
	Clinical & Both Improvements (Separate Sessions)	0	8	2	6
	Clinical, Suicide, & Both Improvements (Separate Sessions)	0	3	1	2
In-Home Services Only		6% (n=1)	94% (n=15)	19% (n=3)	81% (n=13)
	Clinical Improvement Only	1	4	0	5
	Suicide Improvement Only	0	0	0	0
	Both Clinical & Suicide Improvement (Same session)	0	2	1	1
	Clinical & Suicide Improvement (Separate Sessions)	0	5	1	4
	Suicide & Both Improvements (Separate Sessions)	0	0	0	0
	Clinical & Both Improvements (Separate Sessions)	0	3	1	2
	Clinical, Suicide, & Both Improvements (Separate Sessions)	0	1	0	1
Both Outpatient Psychiatric and In-Home Services		8% (n=7)	92% (n=79)	15% (n=13)	85% (n=73)
	Clinical Improvement Only	1	11	1	11
	Suicide Improvement Only	0	8	1	7
	Both Clinical & Suicide Improvement (Same session)	3	15	3	15
	Clinical & Suicide Improvement (Separate Sessions)	1	7	0	8
	Suicide & Both Improvements (Separate Sessions)	2	7	2	7
	Clinical & Both Improvements (Separate Sessions)	0	26	5	21
	Clinical, Suicide, & Both Improvements (Separate Sessions)	0	5	1	4

Outpatient Psychiatric Services Only (n=92)	3 Months			6 Months		
	No New Offense	Recidivism	Suppression	No New Offense	Recidivism	Suppression
No Clinical or Suicide Change	8	0	1	3	0	0
No Clinical or Suicidal Improvement (more at-risk)	2	1	0	8	1	0
Clinical Improvement Only	12	2	2	13	1	2
Suicide Improvement Only	10	2	0	11	1	0
Both Clinical & Suicide Improvement (Same session)	22	4	2	22	5	1
Clinical & Suicide Improvement (Separate Sessions)	4	2	1	7	0	0
Suicide & Both Improvements (Separate Sessions)	3	1	1	4	1	0
Clinical & Both Improvements (Separate Sessions)	5	2	2	7	2	0
Clinical, Suicide, & Both Improvements (Separate Sessions)	1	1	1	2	1	0
	67	**15**	**10**	**77**	**12**	**3**

In-Home Services Only (n=17)	No New Offense	Recidivism	Suppression	No New Offense	Recidivism	Suppression
Clinical Improvement Only	4	1	0	3	2	0
Suicide Improvement Only	0	0	0	0	0	0
Both Clinical & Suicide Improvement (Same session)	3	0	0	2	1	0
Clinical & Suicide Improvement (Separate Sessions)	4	1	0	4	0	1
Suicide & Both Improvements (Separate Sessions)	0	0	0	0	0	0
Clinical & Both Improvements (Separate Sessions)	3	0	0	2	0	1
Clinical, Suicide, & Both Improvements (Separate Sessions)	1	0	0	1	0	0
	15	**2**	**0**	**12**	**3**	**2**

Both Outpatient Psychatric and In-Home Services (n=88)	No New Offense	Recidivism	Suppression	No New Offense	Recidivism	Suppression
Clinical Improvement Only	10	1	1	8	2	2
Suicide Improvement Only	5	1	0	4	2	0
Both Clinical & Suicide Improvement (Same session)	14	3	1	14	3	1
Clinical & Suicide Improvement (Separate Sessions)	4	1	2	7	0	0
Suicide & Both Improvements (Separate Sessions)	5	2	2	4	4	1
Clinical & Both Improvements (Separate Sessions)	21	1	5	18	5	4
Clinical, Suicide, & Both Improvements (Separate Sessions)	6	3	0	6	1	2
	65	**12**	**11**	**61**	**17**	**10**

na=16 @ 3 months
2= University Recidivate
14= University Suppression

na=16 @ 6 months
16=University Suppression

9 Months			12 Months		
No New Offense	Recidivism	Suppression	No New Offense	Recidivism	Suppression
3	0	0	3	0	0
8	1	0	7	2	0
14	2	0	13	2	1
10	1	1	11	1	0
26	1	1	24	4	0
6	0	1	7	0	0
4	1	0	3	2	0
7	2	0	9	0	0
3	0	0	2	1	0
81	**8**	**3**	**79**	**12**	**1**

No New Offense	Recidivism	Suppression	No New Offense	Recidivism	Suppression
3	1	1	5	0	0
0	0	0	0	0	0
2	1	0	3	0	0
4	1	0	5	0	0
0	0	0	0	0	0
2	1	0	2	1	0
1	0	0	0	1	0
12	**4**	**1**	**15**	**2**	**0**

No New Offense	Recidivism	Suppression	No New Offense	Recidivism	Suppression
9	0	3	11	0	1
6	0	0	6	0	0
15	3	0	17	1	0
7	0	0	5	2	0
7	2	0	9	0	0
21	5	1	22	4	1
9	0	0	8	1	0
74	**10**	**4**	**78**	**8**	**2**